User fees impact access to health care for female children in rural Zambia

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Summary

Background

The World Bank and International Monetary Fund favor policies that impose health care user fees. User fees offer the benefit of revenue and may decrease inappropriate care. However, user fess may deter needed care, especially in vulnerable populations. We evaluated male vs. female child health care utilization in rural Zambia among children with (5-6 years old) and without (3-4 years old) user fees imposed.

Methods

A cross sectional analysis of health care utilization in a large Zambian hospital was conducted for children 3-6 years of age during a one-month observation period. Diagnoses and treatments were compared using paired t-tests. Chi-square tests compared outpatient service use. The relative risk of admission was determined for each stratum. Logistic models were developed to evaluate the impact of age, gender, and the age-gender interaction variable on hospital admissions.

Findings

Trends suggest female children may be less likely to present for care even before user fees are imposed ($p=0.25$). Among all diagnoses, only gastrointestinal were statistically different in males (14.4%) and females (8.7%) ($p=0.04$). Treatment type, treatment number, and number of diagnoses did not differ between genders. The relative risk of admission was highest for males 5-6 years old. Neither age nor gender alone was a significant determinant of hospital admission. However, the age-gender interaction was significant. Female admissions are most likely when care is free and least likely when costs are incurred.

Interpretation

Health services user fees appear to influence utilization of inpatient care for female children in rural Zambia.

Introduction

Economic crises for developing countries led to many health care policy changes in the 1980s and 1990s (1). Structural adjustment policies, favored by the International Monetary Fund (IMF) and World Bank, limited government funded care and emphasized individual financial responsibility for health care while increasing healthcare privatization (2). Historically, adjustment policies have been required of countries seeking World Bank/IMF loans (3). Such policies commonly result in the implementation of user fees for health care utilization.

Ideally, user fees provide much needed revenues for health care systems in developing countries while decreasing inappropriate use of health care resources (4). The potential for user fees to act as a deterrent for needed care is of substantial concern, especially for vulnerable populations (1,5-6). UNICEF addressed these concerns by suggesting that short-term policies directed at the macro-, meso-, and sectoral levels during adjustment may ameliorate potential adverse effects on vulnerable populations, such as the poor, the chronically ill, and children (7).

To address the potential impact of user fees as a deterrent for care in a vulnerable population, we evaluated healthcare utilization among children in a large hospital in rural Zambia where user fees for children five years and older have been in place since 1982. The population served by this hospital consists of subsistence farmers with limited access to currency. Traditionally polygamous, this culture values male above female children. Female children therefore represent a particularly vulnerable group in which negative effects of user fees might be detected, if such negative effects exist almost 2 decades after implementation.

Methods

To assess the effect of user fees on health care utilization for female children, we conducted a cross sectional comparison of health care utilization for males vs. females among 3-4 year olds (without user fees) and 5-6 year olds (with user fees). User fees for outpatient care are modest (500 kwacha or less than 10 pence). If hospitalization is recommended, fees are substantially more requiring approximately 30 pence per day with 3-5 days of hospitalization costs requested prior to admission.

From August 1-September 1, 2000, records were reviewed daily for all patients presenting for care to a large, rural Zambian hospital. Data was extracted from administrative records for the following characteristics-age, gender, diagnoses or presenting complaint, treatments prescribed, and disposition (*i.e.*-admitted to hospital or discharged to home).

Diagnoses were broadly categorized *a priori* into one of the following categories: wound, pain, rash, malaria, measles, chest infection, gastrointestinal, chronic disease, congenital abnormality, or miscellaneous other. The evaluating health care provider often recorded the complaint rather than a diagnosis. Treatments prescribed were broadly categorized *a priori* into one of the following categories: symptomatic remedy, antibiotic (bacterial), antihelminthic, antifungal, antimalarial, topical agent, vitamin, and procedure. Symptomatic treatments included drugs such as acetaminophen to reduce fever. Procedures included incisions and drainage of abscesses and setting fractured limbs. All diagnoses and treatments were recorded with several potentially listed for a single child.

Male and female diagnoses, treatment prescriptions, number of diagnoses, and total number of treatments prescribed were compared with two-tailed paired t-tests. P-values less than 0.05 were considered significant. No adjustment was made for multiple comparisons. The gender distribution presenting for outpatient care in the 3-4 year olds (without user fees) and 5-6 year olds (with user fees) were compared using the chi-square test. The relative risks of admission within each of the four strata were compared. Logistic models were developed for the probability of hospital admission, which included independent variables for age group, gender, and the age group-gender interaction.

Results

During the one-month observation period, 549 children between 3 and 6 years old presented for care. Common diagnoses included chest infections (43.0%) and malaria (25.9%). Table 1 illustrates the diagnoses among all children. The only significant difference between males and females for diagnoses was for gastrointestinal problems, which were more common in males (14.4%) relative to females (8.7%) ($p=0.04$). Males and females did not differ in the number of diagnoses given ($p=0.21$).

Symptomatic drugs (68.7%) and antibiotics (45.6%) were the most commonly prescribed treatments. Table 2 illustrates the prescribed treatments. No significant difference between males and females was detected for any treatment. A similar analysis limited to children who were not admitted to the hospital also failed to show significant differences between the treatments prescribed (results not shown). Males and females also did not differ in the number of treatments prescribed ($p=0.32$).

Among 3-4 year old children (without user fees) presenting to the outpatient department for evaluation, 215 (50%) were male and 213 (50%) were female. In the 5-6 year old group (with user fees), 75 (56%) were male and 59 (44%) were female. This trend was not statistically significant ($p=0.25$).

Table 3 illustrates the age and gender distribution and relative risk of admission among children 3-6 years old. For 11 children, disposition status was not documented. The logistic regression model evaluating the probability of admission with relative risks and confidence intervals is presented in Table 4. Although neither age group nor gender was a significant determinant of admission, the age group-gender interaction variable was significant ($p=0.04$). Adding the number of diagnoses, the number of treatment, and the GI diagnoses to the model resulted in <10% change in estimates and did not alter significance levels.

Discussion

In this rural Zambian hospital, ill children requiring emergent care are admitted on presentation and financial payment is sought after the child is stabilized. However, for most children, parental preferences are considered and parents often ask for clarification of financial obligations before agreeing to admission. Children are rarely admitted against parental wishes.

Trends in the data suggest that female children are less likely to present for care relative to male children when user fees are imposed, but this trend is not significant. The relative risk of admission for female children in the 3-4 year old group where user fees are not imposed was relatively high. This may represent a difference in disease severity among females brought for care, however we were not able to detect any disease severity

differences by evaluating diagnoses, complaints, or treatments. Our logistic models suggest that user fees selectively influence hospital admission for female children in rural Zambia with admission relative to males greater when care is free and less when user fees are imposed.

Although other non-medical factors, including travel costs, may influence parental consideration for bringing a child to the clinic for assessment, it is difficult to imagine factors other than the imposed fees or disease severity at presentation which would selectively influence admission for females at the rather artificial segregation of less than or greater than 5 years old. Many of the health care providers in this rural hospital are non-Zambian expatriates, so cultural bias for male admissions from the medical caregiver's perspective seems unlikely. The inconvenience associated with having a hospitalized child did not appear to deter admission in the younger females for whom user fees were not required. The catchment region for this hospital serves a uniformly poor population. Previous attempts to assess socioeconomic status have revealed almost no variation in resources or housing.

If user fees among female children selectively deter care seeking and free care increases access to curative services, then user fees may have long-term implications for female health in developing countries. Excess female mortality is considered among the leading problems in health and social well being in the world (8). Several studies have determined that excess female mortality is brought about through systemic neglect of the health and nutrient needs of girls and women (9-11). Studies from Bangladesh have reported disproportionate child mortality rates among females for every age after the neonatal period (12) and have hypothesized that preferential utilization of health systems for males contributes to this mortality differential (13). Recent work in Bangladesh has concluded "gender differences in mortality may not be as much affected by preventive measures…as efforts to provide equivalent curative services to female and male children"(14). Our data suggests that user fees may have particular influence on care seeking for female children. This Zambian experience concurs with Bangladesh studies, which found that health care services involving even modest expense are disproportionately directed toward males and the effect is most pronounced among the very poor (15).

Demand for health services in other regions of Africa have been shown to be very sensitive to price (16). User fees imposed in Swaziland, during the time Zambian user fees were imposed, decreased health services utilization by 17% (17). Similar decreases in health services utilization were noted in Zaire after user fees were instituted (18). Low household income is a known barrier to health care utilization in developing countries (19). Among rural dwellers in Zambia, user fees appear to be detrimental for female children who represent an especially vulnerable group. Some have suggested that when health care policies are being formed, close evaluation of the consequences of user fees in vulnerable populations needs to be completed (20). We have demonstrated that even modest, small-scale evaluations undertaken in a particularly vulnerable population can demonstrate the influence of user fees in Zambia over 2 decades after such fees were instituted as part of structural adjustment.

Table 1-Diagnoses for 549 children brought for care in rural Zambia

Diagnosis/Complaint	**Males (%)**	**Females**	**p-value**
Chest infection	113 (47.9)	123 (52.1)	0.12
Malaria	65 (22.9)	77 (29.1)	0.10
Gastrointestinal	**41 (14.4)**	**23 (8.7)**	**0.04**
Rash	28 (9.7)	28 (10.6)	0.78
Wound	20 (7.0)	11 (4.2)	0.14
Chronic Disease	9 (3.2)	7 (2.6)	0.71
Measles	11 (3.9)	4 (1.5)	0.09
Congenital Problem	4 (1.4)	5 (1.9)	0.66
Pain	2 (0.7)	3 (1.1)	0.68
Other	9 (3.2)	8 (3.0)	0.92

Table 2-Prescribed treatments for 549 children brought for care in rural Zambia

Treatment	**Males (%)**	**Females (%)**	**p-value**
Symptomatic	202 (69.7)	184 (67.7)	0.61
Antibiotic*	133 (45.9)	123 (45.2)	0.88
Antimalarial	65 (22.4)	77 (28.3)	0.11
Topical	45 (15.5)	41 (15.1)	0.88
Vitamin	18 (6.2)	13 (4.8)	0.46
Antihelminthic	18 (6.2)	12 (4.4)	0.34
Antifungal	0	2 (0.2)	0.13
Procedure	1 (0.2)	0	0.34

Table 3-Admissions for males and females by age group¶

	Admitted	**RR°**
Males 5-6 (N=70)	17	1
Males 3-4 (N=207)	8	0.13
Females 5-6 (N=57)	10	0.66
Females 3-4 (204)	15	0.24

Table 4-Logistic model for the probability of admission to the hospital

	RR	**Confidence Interval**
Age group	1.21	0.43-3.41
Gender	1.86	0.94-5.93
(Age group)(Gender)	**0.28**	**0.60-0.79**

* antibacterial agent

¶ Children 3-4 years old require no user fee while the 5-6 age group must pay user fees

° All p's >0.05

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